

## Height Adjustable Lamp

### TECHNICAL FIELD

5 [0001] This invention relates generally to a height adjustable lamp, in particular, to provide a lamp having a height adjustable mechanism that can adjust height of the lamp as well as prevent a cable received therein from being damaged by overly twisted.

### 10 BACKGROUND OF THE INVENTION

[0002] One of the methods to save space and fee of delivering or packaging a good is to reduce the size of the good. Separating the good to two or more portions can reduce a height or width of a good and they can be assembled, when used. The height of a  
15 floor or a table lamp is usually larger than its width and that makes it inconvenient to be moved. To solve this problem, a conventional table lamp referring to Fig. 9 contains an upper portion and a lower portion. The upper portion contains a lamp head 200 and an upper tube 100. The lower portion contains a base 500 and a lower tube 400. The lamp can be packaged with the two portions separated. When used, the  
20 upper portion is threadly connected to the lower portion. However the cable 300 received in the tubes 100, 400 of the lamp is easily damaged because when the upper portion of the lamp is rotated to be threadly connected to the lower portion of the lamp, the cable 300 received in both upper tube 100 and lower tube 400 may be damaged by overly twisted. The two-piece structure of the conventional lamp is only  
25 for package or delivery purpose. The conventional lamp doesn't provide a function of

adjusting the height of the lamp according to a user's need. Therefore a lamp that can adjust its height without possibly damaged the cable received therein is needed.

## SUMMARY OF INVENTION

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[0003] It is therefore an objective of the present invention to provide a lamp with its height adjustable according to a user's need.

[0004] Another object of the invention is to provide a lamp when the height of the lamp is adjusted, the cable received therein won't be damaged.

- 10 [0005] The present invention, briefly summarized, in one embodiment discloses a height adjustable lamp. The lamp mainly contains: an inner tube, a positioning device, an outer tube, a fastener, a sleeve, a lamp head, a base, and a cable. The positioning device is connected to a rear end of the inner tube. The outer tube has an elongated rail therein. The elongated rail is engaged with the positioning device for preventing
- 15 the inner tube from rotating in the outer tube. The fastener has plural inward claws at a first end thereof, a threaded portion thereon and a second end mounted to a top end of the outer tube. The sleeve embraces the fastener and the top end of the outer tube. The sleeve has a threaded portion therein and an inclined surface situated above the threaded portion of the sleeve. The lamp head is connected to a top end of the inner
- 20 tube. The base is mounted to a rear end of the outer tube. The cable is received within the inner tube and electronically connected to the lamp head for providing electric power to the lamp head. The inner tube is slidably received through the fastener and in the outer tube. The threaded portion of the sleeve is engaged with the threaded portion of the fastener in order the inclined surface of the sleeve can press against the
- 25 inward claws to hold the inner tube in position.

## BRIEF DESCRIPTION OF DRAWINGS

[0006] The invention will be more clearly understood after referring to the following

5 detailed description read in conjunction with the drawings wherein :

Fig.1 is a perspective view of an embodiment of present invention;

Fig.2 is a exploded view of the embodiment;

Fig 3 is a cross sectional view of the embodiment when the inner tube is not hold by the claws of the fastener;

10 Fig.4 is a cross sectional view of the embodiment when the inner tube is hold by the claws of the fastener;

Fig.5 is a cross sectional view of the embodiment showing how the elongated rail and the slot are engaged.

Fig.6 is a perspective view of the embodiment showing the differences between the height of the embodiment adjusted before and after;

Fig.7 is a cross sectional view of another embodiment showing how the inner tube is prevented from rotating.

Fig.8 is a cross sectional view of further another embodiment showing how the inner tube is prevented from rotating; and

20 Fig.9 is a perspective view of a conventional lamp.

## DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0007] With reference to Fig.1 to Fig.5, the height adjustable lamp mainly contains:

25 an inner tube 1, a positioning device 2, an outer tube 3, a fastener 4, a sleeve 5, a lamp

head 6, a base 7, and a spiral cable 8. The positioning device 2 containing a slot 21 thereon is threadly connected to a rear end of the inner tube 1. The outer tube 3 has an elongated rail 31 installed longitudely along an inner surface thereof. Referring to Fig. 2 and Fig.5, the elongated rail 31 is engaged with the slot 21 of the positioning device 2 for allowing the inner tube 1 to move only vertically and preventing the inner tube 1 from rotating in the outer tube 3. The spiral cable 8 sometimes contacts inner surfaces of the inner tube 1. Without the slot 21 engaged with the elongated rail 31, once the inner tube rotates, the spiral cable 8 is dragged to rotate and the spiral cable 8 may be damaged by overly twisted. The fastener 4 has plural flexible inward claws 41 at a first end thereof, a threaded portion 42 thereon and a second end 43 threadly engaged with a top end 32 of the outer tube 3. The sleeve 5 embraces the fastener 4 and the top end 32 of the outer tube 3. The sleeve 5 has an inclined surface 51 and a threaded portion 52 therein. The inclined surface 51 is situated above the threaded portion 52. The lamp head 6 is connected to a top end of the inner tube 1. The lamp head 6 contains a joint portion 61 for allowing the lamp head 6 to rotate to desired position. The base 7 is mounted to a rear end of the outer tube 3. The spiral cable 8 is received within the inner tube 1 and electronically connected to the lamp head 6 for providing electric power to the lamp head 6. The inner tube 1 is slidably received through the fastener 4 and in the outer tube 3. The fastener 4 incorporated with the sleeve 5 is the means 50 for fastening the inner tube 1 to the outer tube 3.

[0008] The threaded end 43 of the fastener 4 is located within the threaded top end 32 of the outer tube 3 and the inner tube move slidably through the fastener 4. Therefore the inner diameter of the fastener 4 is larger than the outer diameter of the inner tube 1. The positioning device 2 has an outer diameter larger than the outer diameter of the

inner tube 1. Hence, the threaded second end 43 blocks the positioning device 2, and the positioning device 2 will not slide off the outer tube 3.

[0009] When the fastener 4 is not engaged with the sleeve 5, the inner tube 1 is released from being held by the inward claws 41 of the fastener 4 and the inner tube 1 can move freely. When rotating the sleeve 5 tightens the fastener 4, the threaded portion 52 of the sleeve 5 is engaged with the threaded portion 42 of the fastener 4 in order the inclined surface 51 of the sleeve 5 can press against the inward claws 41 to hold the inner tube 1 in position. Accordingly, a user can adjust the height of the lamp as desired without damaging the spiral cable 8 received therein as showed in Fig.6.

10 [0010] Fig.7 shows another embodiment of the present invention. The positioning device 2a has a non-circular outer cross section and the outer tube 3a has a same non-circular inner cross section. Since the inner tube 1 is connected to the positioning device 2a, and the positioning device 2a is engaged with the outer tube 3a, the inner tube 1 is restricted from rotating.

15 [0011] Further an embodiment of the present invention is illustrated in Fig.8. The positioning device 2b has a polygon outer cross-section and the outer tube 3b has a same polygon inner cross-section. Since the inner tube 1 is connected to the positioning device 2b, and the positioning device 2b is engaged with the outer tube 3b, the inner tube is restricted from rotating.

20 [0012] Further another embodiment of the present invention contains a positioning device having a protrusion thereon engaged with a elongated slot rail in the outer tube 3 to prevent the inner tube 1 from rotating in said outer tube 3.

[0013] Numerous characteristics and advantages of the invention have been set forth in the foregoing description, together with details of the structure and function of the invention, and the novel features thereof are pointed out in appended claims. The

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disclosure, however, is illustrated only, and changes may be made in detail, especially, in matters of shape, size and arrangement of parts, materials and the combination thereof within the principle of the invention, to the full extend indicated by the broad general meaning of the terms in which the appended claims are expressed. ;